1-3. (Canceled)

4. (Previously Presented) A coil arrangement comprising:

a first conductive member arranged along a first axis; and

a second conductive member arranged along a second axis which is approximately coaxial with the first axis,

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

5. (Currently Amended) A ~~The~~ coil arrangement ~~of claim 4,~~ comprising:

a first conductive member arranged along a first axis; and

a second conductive member arranged along a second axis which is approximately coaxial with the first axis,

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction,

wherein the first and second conductive members form at least one magnetic field gradient coil structure, and

wherein the first conductive member is offset axially from the second conductive member.

6. (Previously Presented) A coil arrangement comprising:

a first conductive member arranged along a first axis;

a second conductive member arranged along a second axis which is approximately coaxial with the first axis; and

a switch configured to dynamically control an offset between the first and the second conductive members,

wherein the first conductive member is offset axially from the second conductive member, and

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction.

7-9. (Canceled)

10. (Previously Presented) A magnetic resonance imaging system comprising a coil arrangement comprising:

a first conductive member arranged along a first axis; and

a second conductive member arranged along a second axis which is approximately coaxial with the first axis;

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

11. (Currently Amended) A ~~The~~ magnetic resonance imaging system ~~of claim 10,~~ comprising a coil arrangement comprising:

a first conductive member arranged along a first axis; and

a second conductive member arranged along a second axis which is approximately coaxial with the first axis,

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction,

wherein the first and second conductive members form at least one magnetic field gradient coil structure, and

wherein the first conductive member is offset axially from the second conductive member.

12. (Previously Presented) A magnetic resonance imaging system comprising a coil arrangement comprising:

a first conductive member arranged along a first axis;

a second conductive member arranged along a second axis which is approximately coaxial with the first axis; and

a switch configured to dynamically control an offset between the first and the second conductive members,

wherein the first conductive member is offset axially from the second conductive member, and

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction.

13-15. (Canceled)

16. (Previously Presented) A method of providing a coil arrangement comprising:

providing a first conductive member arranged along a first axis; and

providing a second conductive member arranged along a second axis which is approximately coaxial with the first axis;

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction, and

wherein the first and second conductive members form at least one magnetic field gradient coil arrangement.

17. (Currently Amended) A ~~The~~ method ~~of claim 16,~~ of providing a coil arrangement comprising:

providing a first conductive member arranged along a first axis; and

providing a second conductive member arranged along a second axis which is approximately coaxial with the first axis,

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction,

wherein the first and second conductive members form at least one magnetic field gradient coil arrangement, and

wherein the first conductive member is offset axially from the second conductive member.

18. (Previously Presented) A method for providing a coil arrangement comprising:

providing a first conductive member arranged along a first axis;

providing a second conductive member arranged along a second axis which is approximately coaxial with the first axis; and

dynamically controlling an offset between the first and the second conductive members,

wherein the first conductive member is offset axially from the second conductive member, and

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction.

19. (Canceled)

20. (Previously Presented) A computer-readable medium for operating a magnetic resonance imaging system comprising a coil arrangement comprising a first conductive member arranged along a first axis and a second conductive member arranged along a second axis which is approximately coaxial with the first axis,

the computer-readable medium having a set of instructions operable to direct a processor to perform the steps of:

permitting a first current to flow in a first direction in the first conductive member; and

permitting a second current to flow in a second direction in the second conductive member, the second direction being opposite to the first direction,

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

21. (Currently Amended) A ~~The~~ computer-readable medium ~~of claim 20~~ for operating a magnetic resonance imaging system comprising a coil arrangement comprising a first conductive member arranged along a first axis and a second conductive member arranged along a second axis which is approximately coaxial with the first axis, the computer-readable medium having a set of instructions operable to direct a processor to perform the steps of:

permitting a first current to flow in a first direction in the first conductive member; and

permitting a second current to flow in a second direction in the second conductive member, the second direction being opposite to the first direction,

wherein the first and second conductive members form at least one magnetic field gradient coil structure, and

wherein the first conductive member is offset axially from the second conductive member.

22. (Canceled)

23. (Currently Amended) A ~~The~~ coil arrangement ~~of claim 1, further~~ comprising:

a first conductive member;

a second conductive member electrically coupled to the first conductive member; and

at least one solenoid coil arrangement, including at least one solenoid,

wherein the second conductive member forms a segment that has an approximate shape of an arc when viewed along a direction of extension of the first conductive member, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

24. (Previously Presented) The coil arrangement of claim 23,

wherein the at least one solenoid coil arrangement comprises:

at least one first solenoid coil,

at least one second solenoid coil, and

wherein the at least one first solenoid coil is wound in a first direction, and the at least one second solenoid coil is wound in a second direction which is opposite to the first direction.

25. (Previously Presented) The coil arrangement of claim 22, wherein the at least one coil structure generates at least one selectable non-uniform gradient field.

26. (Previously Presented) The coil arrangement of claim 22, wherein the at least one coil structure generates at least one long-axis gradient field.

27. (Previously Presented) The coil arrangement of claim 22, wherein the at least one coil structure generates at least one transverse gradient field.

28. (Previously Presented) The coil arrangement of claim 24, wherein the at least one first solenoid coil is electrically connected to a first power source, and the at least one second coil is electrically connected to a second power source which is different from the first power source.

29. (Previously Presented) The coil arrangement of claim 24, wherein the at least one first solenoid coil and the at least one second solenoid coil are configured to achieve at least one predetermined magnetic field transition.

30. (Currently Amended) A ~~The~~ coil arrangement ~~of claim 1, further~~ comprising:

a first conductive member; and

a second conductive member electrically coupled to the first conductive member,

wherein the second conductive member forms a segment that has a plurality of arcs which are approximately 360 degrees or less,

wherein the second conductive member forms a segment that has an approximate shape of an arc when viewed along a direction of extension of the first conductive member, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

31. (Previously Presented) The coil arrangement of claim 30, wherein the segment the arcs which are approximately 270 degrees or less.

32. (Previously Presented) The coil arrangement of claim 30, wherein the segment that has the arcs which are approximately 180 degrees or less.

33. (Previously Presented) The coil arrangement of claim 30, wherein at least a first one of the arcs is configured to allow a first current to flow in a first direction and at least a second one of the arcs is configured to allow a second current to flow in a second direction which is opposite to the first direction.

34. (Previously Presented) The coil arrangement of claim 30, wherein at least a first one of the arcs is situated symmetrically opposite at least a second one of the arcs.

35. (Previously Presented) The coil arrangement of claim 34, wherein the at least a first one of arcs is configured to allow a first current to flow in a first direction and the at least a second one of the arcs is adapted to allow a second current to flow in a second direction which is opposite to the first direction.

36. (Currently Amended) A ~~The~~ coil arrangement ~~of claim 4, further~~ comprising:

a first conductive member arranged along a first axis;

a second conductive member arranged along a second axis which is approximately coaxial with the first axis; and

a plurality of switches configured to dynamically control an offset between the first and the second conductive members,

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

37. (Previously Presented) The coil arrangement of claim 36, wherein at least a first switch of the plurality of switches allows current to flow through the first conductive member, and at least a second switch of the plurality of switches prevents current from flowing through the second conductive member.

38. (Previously Presented) The coil arrangement of claim 36, wherein the plurality of switches are configured to control the effective length of the coil arrangement or the distance between the first and second conductive members.

39. (Currently Amended) A ~~The~~ coil arrangement ~~of claim 1, further~~ comprising:

a first conductive member;

a second conductive member electrically coupled to the first conductive member;

a third conductive member, which is positioned approximately parallel to the first conductive member, and which is electrically coupled to the second conductive member;

a fourth conductive member electrically coupled to the first conductive member and the third conductive member; and

a plurality of switches configured to dynamically control an offset between the second and the fourth conductive members,

wherein the second conductive member forms a segment that has an approximate shape of an arc when viewed along a direction of extension of the first conductive member, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

40. (Previously Presented) The coil arrangement of claim 39, wherein a first switch of the plurality of switches allows current to flow through the second conductive member, and a second switch of the plurality of switches prevents current from flowing through the fourth conductive member.

41. (Previously Presented) The coil arrangement of claim 39, wherein the plurality of switches are configured to control at least one of a modifiable length of the coil arrangement or a distance between the second and fourth conductive members.

42. (Previously Presented) The coil arrangement of claim 6, further comprising:

at least one further switch configured to dynamically control the offset between the first and the second conductive members.

43. (Previously Presented) The coil arrangement of claim 42, wherein the switch allows current to flow through the first conductive member, and the at least one further switch prevents current from flowing through the second conductive member.

44. (Previously Presented) The coil arrangement of claim 42, wherein the switch and the at least one further switch are configured to control at least one of a modifiable length of the coil arrangement or a distance between the first and second conductive members.

45. (Currently Amended) A ~~The~~ magnetic resonance system ~~of claim 7, wherein the coil arrangement further comprises~~ comprising a coil arrangement comprising:

a first conductive member;

a second conductive member electrically coupled to the first conductive member;

a third conductive member, which is positioned approximately parallel to the first conductive member, and which is electrically coupled to the second conductive member;

a fourth conductive member electrically coupled to the first conductive member and the third conductive member; and

a plurality of switches configured to dynamically control an offset between the second and the fourth conductive members,

wherein the second conductive member forms a segment that has an approximate shape of an arc when viewed along a direction of extension of the first conductive member, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

46. (Currently Amended) A ~~The~~ magnetic resonance system ~~of claim 10, wherein the coil arrangement further comprises~~ comprising a coil arrangement comprising:

a first conductive member arranged along a first axis;

a second conductive member arranged along a second axis which is approximately coaxial with the first axis; and

a plurality of switches configured to dynamically control an offset between the first and the second conductive members,

wherein the first conductive member is adapted to allow a first current to flow in a first direction, and the second conductive member is adapted to allow a second current to flow in a second direction which is opposite to the first direction, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

47. (Previously Presented) The magnetic resonance system of claim 12, wherein the coil arrangement further comprises:

at least one other switch configured to dynamically control the offset between the first and the second conductive members.

48. (Currently Amended) A ~~The~~ computer-readable medium ~~of claim 19, wherein the set of instructions further having the steps of~~ for operating a magnetic resonance imaging system comprising a coil arrangement of claim 2, the computer-readable medium having a set of instructions operable to direct a processor to perform the steps of:

permitting the first conductive member to receive an electrical current;

permitting the second conductive member to pass the electrical current therethrough;

permitting the electrical current to exit through the third conductive member; and

permitting a plurality of switches to dynamically control the offset between the second conductive member and a fourth conductive member,

wherein the fourth conductive member is electrically coupled to the first conductive member and the third conductive member.

49. (Currently Amended) A ~~The~~ computer-readable medium ~~of claim 19, wherein the set of instructions further having the steps of~~ for operating a magnetic resonance imaging system comprising a coil arrangement of claim 2, the computer-readable medium having a set of instructions operable to direct a processor to perform the steps of:

permitting the first conductive member to receive an electrical current;

permitting the second conductive member to pass the electrical current therethrough;

permitting the electrical current to exit through the third conductive member; and

facilitating a plurality of switches to dynamically control an offset between the second conductive member and a fourth conductive member,

wherein the fourth conductive member is electrically coupled to the first conductive member and the third conductive member, and

wherein the plurality of switches is configured to control at least one of a modifiable length of the coil arrangement or a distance between the second and the fourth conductive members.

50. (Currently Amended) A ~~The~~ computer-readable medium ~~of claim 20, wherein the set of instructions further having the steps of~~ for operating a magnetic resonance imaging system comprising a coil arrangement comprising a first conductive member arranged along a first axis and a second conductive member arranged along a second axis which is approximately coaxial with the first axis, the computer-readable medium having a set of instructions operable to direct a processor to perform the steps of:

permitting a first current to flow in a first direction in the first conductive member;

permitting a second current to flow in a second direction in the second conductive member, the second direction being opposite to the first direction; and

facilitating a plurality of switches to dynamically control an offset between the first and the second conductive members,

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

51. (Currently Amended) A ~~The~~ computer-readable medium ~~of claim 20, wherein the set of instructions further having the steps of~~ for operating a magnetic

resonance imaging system comprising a coil arrangement comprising a first conductive member arranged along a first axis and a second conductive member arranged along a second axis which is approximately coaxial with the first axis, the computer-readable medium having a set of instructions operable to direct a processor to perform the steps of:

permitting a first current to flow in a first direction in the first conductive member;

permitting a second current to flow in a second direction in the second conductive member, the second direction being opposite to the first direction; and

facilitating a plurality of switches to dynamically control an offset between the first and the second conductive members,

wherein the plurality of switches is configured to control at least one of a modifiable length of the coil arrangement or a distance between the second and the fourth conductive members, and

wherein the first and second conductive members form at least one magnetic field gradient coil structure.

52. (Previously Presented) The computer-readable medium of claim 21, wherein the set of instructions further having the steps of:

facilitating a plurality of switches to dynamically control an offset between the first and the second conductive members.

53. (Previously Presented) The computer-readable medium of claim 21, wherein the set of instructions further having the steps of:

facilitating a plurality of switches to dynamically control an offset between the first and the second conductive members,

wherein the plurality of switches is configured to control at least one of a modifiable length of the coil arrangement or a distance between the second and the fourth conductive members.